

Appl. No. : 09/998,682
Amendment and RCE dated : 07/11/2005
in Reply to Final Office
Action dated : 01/11/2005
Express Mail Label No. : EV604747510US

Attorney Docket No.: 109878.126 US1

REMARKS/ARGUMENTS

I. Status of the Application and Summary of the Office Action

This paper is filed in response to the Final Office Action, mailed January 11, 2005. Reconsideration of this application is respectfully requested.

Claims 1-33 and 44-46 are presented for examination. Claims 1, 18, and 33 are independent and have been amended.

II. Written Description Rejection and Support for Current Amendments

The Examiner rejected the claims under 35 U.S.C. § 112 for failing to comply with the written description requirement. In particular, the Examiner contends that the limitation “for each navigation state each of the attribute-value pairs in the particular expression of attribute-value pairs corresponding to that navigation state characterizes in accordance with the expression all of the materials in the particular subset of materials corresponding to that navigation state” in claims 1 and 18 was not supported in the specification.¹

While Applicants believe that the original language was supported, Applicants have amended the claim limitation so as to follow more directly the language in the specification. The claims now recite, instead of the language to which the Examiner objected, “for each navigation state the particular subset of the materials corresponding to the navigation state consists of those materials in the navigation system that are each described by every attribute-value pair in the particular expression of attribute-value pairs corresponding to that navigation state in accordance with the particular expression.”

Applicants believe that this limitation is amply described both generally in the specification and specifically at least at pages 6, 8-9, 10, 14, 21-22, 29-30 and 33; and in Figures 6 and 19-22.

¹ Although not specifically objected to, similar language is found in claim 33.

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On page 14, the specification concisely summarizes the navigation states: “Each [navigation] state is composed of an expression of terms and of the set of documents associated with those terms in accordance with that expression.” The “documents” are an example of the “materials” referenced in the claims and the “terms” are the “attribute-value pairs” referenced in the claims.² This description is elaborated on pages 29-30, focusing on navigation states corresponding to conjunctive expressions, by way of example:

A navigation state can be represented either by an expression of terms or by the subset of the collection of documents that correspond to the term expression.

By way of example, types of navigation states include conjunctive navigation states, disjunctive navigation states and negational navigation states. Conjunctive navigation states are a special case of navigation states in which the term expression is conjunctive—that is, the expression combines terms using only the AND operator. ...

In one aspect of the present invention, a conjunctive navigation state has two representations. First, a conjunctive navigation state corresponds to a subset of the collection of documents. Second, a conjunctive navigation state corresponds to a conjunctive expression of mutually incomparable terms. ... The subset of documents corresponding to a conjunctive navigation state includes the documents that are commonly associated with all of the terms in the corresponding expression of mutually incomparable terms. At the same time, the expression of mutually incomparable terms corresponding to a conjunctive navigation state includes all of the minimal terms from the terms that are common to the subset of documents, i.e., the terms that are commonly associated with every document in the subset.

The description further addresses other types of expressions on page 33:

In other embodiments of the present invention, there are additional modes of navigation. In systems that support the corresponding types of navigation states, these modes may include generalization of the navigation state through disjunctive selection, as shown in

² For example, at page 6 the specification refers to “search and navigation of a collection of *documents or other materials* using certain common attributes associated with those materials” and to how the invention “enables this navigation mode by associating *terms (attribute-value pairs)* with the documents” (emphasis added).

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Figure 19, as well as refinement of the navigation state through negational selection, as shown in Figure 20. In general, terms can be combined using Boolean logic.”

This language exactly describes the limitation in question. In particular, the section from pages 29-30 quoted above (“The subset of documents corresponding to a conjunctive navigation state includes the documents that are commonly associated with all of the terms in the corresponding expression of mutually incomparable terms.”) explains that, for the specific example of a conjunctive navigation state, the materials in each navigation state (the documents “corresponding to each navigation state”) are those that are described by (are “commonly associated with”) each of the attribute-value pairs (“all of the terms”):

Claim Language	Specification Support: Pages 29-30
“for each navigation state the particular subset of the materials corresponding to the navigation state”	“The subset of documents corresponding to a conjunctive navigation state”
“consists of those materials in the navigation system”	“includes the documents”
“that are each described by ... in accordance with the particular expression”	“that are commonly associated with”
“every attribute-value pair in the particular expression of attribute-value pairs corresponding to that navigation state”	“all of the terms in the corresponding expression”

The rest of the above-quoted paragraph provides further support. The “expression of mutually incomparable terms corresponding to a conjunctive navigation state includes all of the

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minimal terms from the terms... that are common to the subset of documents, i.e., the terms that are commonly associated with every document in the subset.” That is, each of the attribute-value pairs for a conjunctive navigation state (the “terms” in the expression of “terms” corresponding to the navigation state) describe (“are common to” or “are commonly associated with”) all the materials (“every document”) in the subset of materials. In addition, Figure 17, to which this section refers, illustrates a set of conjunctive navigation states in which, as claimed, for each navigation state the materials corresponding to that navigation state are each described by every attribute-value pair corresponding to that navigation state.

The ability to specify non-conjunctive expressions, i.e., expressions that use other types of operators besides or in addition to AND, is well-supported in the specification. For other types of navigation states, e.g., navigation states having expressions that use OR or NOT Boolean operators, the relationship between the attribute-value pairs in the expression and the navigation state will also be in accordance with the expression, and not arbitrary. This is explained, for example, on pages, 6, 8, 9, 14, 21-22, and 33 and demonstrated in Figures 19-22. Page 8 explains:

The user interface preferably presents the user’s navigation state as an expression of terms organized by attribute. For a given expression of terms, the user interface presents the materials that are associated with those terms in accordance with that expression and presents relevant navigation options for narrowing or generalizing the navigation state.

This section (“the materials that are associated with those terms in accordance with that expression”) directly echoes the claim language (“those materials in the navigation system that are each described by every attribute-value pair in the particular expression of attribute-value pairs in accordance with the particular expression”). This is reinforced on page 14: “Each state is composed of an expression of terms and of the set of documents associated with those terms in accordance with that expression.”

This is also illustrated in Figures 19-22, discussed on pages 21-22. For example, Figure 20 corresponds to the expression {*Fund Family: Fidelity Investments OR Fund Family:*

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Vanguard Group}. The display shows mutual funds 320 that match either (in accordance with the “OR” in the expression) selected attribute-value pair. Figure 22 corresponds to the expression *{Products:DVDs AND Genre: Drama AND (NOT Director: Martin Scorsese)}*. The display shows Drama DVDs that were not directed by Martin Scorsese, as specified by the attribute-value pairs and Boolean operators in the expression.

Further general support for the above limitation appears on pages 6-8 and 12-13. The Summary of the Invention, at page 6, explains that the “navigation system interface allows the user to select values for the attributes associated with the materials in the current navigation state and returns the materials that correspond to the user’s selections” and “[I]n some embodiments, the user’s selections may be combined using Boolean operators.” That is, the system provides in one aspect for user-selected attribute-value pairs (supporting, in the claims, “every attribute-value pair in the particular expression of attribute-value pairs”) associated with the materials in the navigation state (supporting, in the claims, “the particular subset of the materials corresponding to the navigation state”). Moreover, the association is in accordance with the Boolean operators that combine the user-selected attribute-value pairs. If this were not true, the ability to use Boolean operators in making selections of attribute-value pairs would be meaningless and the materials returned in response would not “correspond” to the user’s selections.

The Summary goes on to explain (at page 7) that the knowledge base includes “a classification mapping that associates each item in the collection of materials with a set of terms that characterize that item.” Again, this supports the claim limitation to a correspondence between the attribute-value pairs (a “set of terms that characterize that item”) and the materials corresponding to the navigation state (“each item”).

The specification also supports the limitations added to the claims. For example, considering Figures 4-6:

Claim 1 now provides that a at least one navigation state, which is a conjunctive one, “includes a first attribute-value pair having a first attribute, in which the first attribute-value pair does not describe all the materials in the navigation system that the first attribute characterizes.”

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Figure 4 shows a first conjunctive navigation state that includes a first attribute-value pair, *Regions: Portuguese Regions*, that does not describe all the materials that the attribute *Regions* characterizes because, for example, it does not describe the materials for which the value of the *Regions* attribute is *French Regions*, as in Figure 3.

Claim 1 also now provides that the at least one navigation state includes a second attribute-value pair and that the second attribute-value pair “does not describe all the materials in the navigation system that the second attribute characterizes.” For example, in Fig. 4, the second attribute-value pair, *Flavors: Pepper*, does not describe all the materials that the attribute *Flavors* characterizes because, for example, it does not describe the materials for which the value of the *Flavors* attribute is *Wood and Nut Flavors*, as in Figure 5.

Claim 1 also now provides that “the first attribute-value pair and the second attribute-value pair are mutually incomparable” As shown in Figure 4, the second attribute-value pair, *Flavors: Pepper*, is mutually incomparable with the first attribute-value pair, *Regions: Portuguese Regions*, because *Flavors: Pepper* does not refine *Regions: Portuguese Regions* and *Regions: Portuguese Regions* does not refine *Flavors: Pepper*. Moreover, they are distinct attribute-value pairs because they can be selected independently.

Likewise, Figure 17 illustrates a number of navigation states that meet the requirements for the claimed “first navigation state” (any of the navigation states with more than one attribute).

III. Prior Art Rejections

The Examiner also rejected the claims in view of Cochran (U.S. Patent No. 6,345,273), alone or in combination with other references.

While Applicants believe that the claims, prior to the present amendments, were patentable over the art of record, the claims have been amended to expedite prosecution. Consequently, in this response, Applicants focus on distinctions relating to the claims as amended.

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The Prior Art Cochran Systems

The Cochran '273 patent, cited by the Examiner, discloses two distinct types of search systems, other than keyword-based systems. One type, which Cochran refers to as a Directory system, involves a hierarchical system in which a user "moves down the 'branches' of the directory 'tree' until they find the information they want." (Cochran '273, col. 1:31-35.) Cochran describes YAHOO as an example of this type of search system, and that system was addressed in the prior response. For example, as discussed in the prior response, such a Directory system does not have navigation states with mutually incomparable attribute-value pairs. This is even more apparent in view of the amended claim language, discussed further below.

Cochran refers to the other type of system as non-hierarchical searching, and explains: "Instead of moving down a Directory tree, a user selects search terms from several search categories that are not organized in a branching tree structure. Selecting from one category does not eliminate the possibility of selecting from other categories because categories are mutually exclusive, unlike Directory searching." (Cochran '273, col. 1:40-45.)

In describing her invention with respect to these search systems, Cochran keeps these two types of search systems distinct. In addition to the passage just quoted, Cochran repeatedly refers to Directory and non-hierarchical systems as distinct, with different features. For example, she summarizes: "Accordingly, non-hierarchical designs (FIGS. 3-8) and Directories (FIGS. 9-13) have different advantages and disadvantages. Yet, both operate more quickly with this new technology." (Cochran '273, col. 8:1-4.) Cochran makes the same distinction at column 5 (e.g., lines 16-26, describing differences if the search design is a Directory/hierarchical versus if the design is non-hierarchical) and column 7 (distinguishing, at lines 33-36, between the figures applicable to a non-hierarchical search system and a Directory search system).

The Cochran '273 patent refers, in its Background section, to an earlier Cochran patent (U.S. Pat. No. 5,768,581), which she states "describes non-hierarchical searching," and which she distinguishes from a Directory tree structure ("Instead of moving down a Directory tree, a user selects search terms from several search categories that are not organized in a branching tree structure").

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The Present Claims

As with the prior response, Applicants will focus this response on claim 1. The pertinent claim language discussed here also appears in the other independent claims, 18 and 33.

Claim 1 refers to a navigation system based on attribute-value pairs and navigation states. Each navigation state corresponds to a particular expression of attribute-value pairs and to a particular subset of the materials. For each navigation state, “the particular subset of the materials corresponding to the navigation state consists of those materials in the navigation system that are each described by every attribute-value pair in the particular expression of attribute-value pairs corresponding to that navigation state in accordance with the particular expression.” That is, all the materials for a navigation state (“the particular subset of the materials corresponding to the navigation state”) are “*each* described by” every one of the attribute-value pairs for a particular navigation state in accordance with the particular expression (“every attribute-value pair in the particular set of attribute-value pairs corresponding to that navigation state in accordance with the particular expression”). For a conjunctive navigation state, the attribute-value pairs in the particular expression will directly describe each of the materials in the particular subset of materials corresponding to the navigation state. For other types of navigation states, the nature of the descriptive relationship will depend on the operators in the expression.

Claim 1 provides that the at least one navigation state “includes a first attribute-value pair having a first attribute, in which the first attribute-value pair does not describe all the materials in the navigation system that the first attribute characterizes.” That is, the first attribute-value pair represents a subset of the materials that the first attribute characterizes. So, for example (and as described above in the previous section), if the first attribute is *Regions*, the first attribute-value pair might be *Regions: Portuguese Regions*, which does not describe all the materials having a region – for example, it does not describe the materials within *French Regions*. Thus, the first attribute-value pair cannot be something like *Regions: Any Region*, *Regions: Select a Region*, or *Regions: Disregard Region*.

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Claim 1 further provides that the first and second attribute-value pairs are mutually incomparable. The “mutually incomparable” limitation previously had appeared earlier in the claim, and means that the second attribute-value pair does not refine the first attribute-value pair. In the above example, and as discussed above, *Flavors: Pepper* does not refine *Regions: Portuguese Regions* or *Regions: Central Portugal*. Thus, the described navigation state that includes the first and second attribute-value pairs cannot be within a directory system (like Yahoo) as described in the prior art of record because (as discussed in a previous response) in such a system a navigation state will not exist that has mutually incomparable attribute-value pairs in which (as required of all navigation states, as discussed above) the materials corresponding to the navigation state are each described by every attribute-value pair corresponding to the (conjunctive) navigation state.

Finally, Claim 1 provides for “a search interface, the search interface including a free-text search tool for accepting free-text queries directed at the materials, the search interface being adapted to generate multi-term interpretations of free-text queries, wherein a multi-term interpretation maps a free-text query to a navigation state that correspond to a particular expression of attribute-value pairs that is a conjunction of mutually incomparable attribute-value pairs.” As discussed on pages 41-49, a user can enter a free-text query to the system. The system is adapted to generate multi-term interpretations of a free-text query, i.e., by mapping a free-text query to a conjunction of terms (attribute-value pairs) that corresponds to a conjunctive navigation state in the system. For example, for the wine subject area, for a query like “1996 Sweet Wines”, the expressions {*Year:1996 AND Wine Types:Sweet Wines AND Wineries: Red Birch*} and {*Year:1996 AND Flavors:Sweet AND Wineries: Red Hill*}, which correspond to valid navigation states, are possible multi-term interpretations that would be generated. Again, such navigation states, corresponding to conjunctions of mutually incomparable attribute-value pairs, do not exist in a directory system.

The Claims are Patentable Over the Art of Record

The claims, as amended, distinguish over Cochran and the other prior art of record. The Examiner has cited Cochran ‘273 as disclosing (for example, by reference to figures 2, 6 and 8) a

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navigation system having navigation states in which each of the attribute-value pairs describes all of the materials in the navigation state, and a navigation state exists having a plurality of mutually incomparable attribute-value pairs. As the Office Action recognizes, the other prior art of record does not teach or suggest this combination. Cochran permits only explicit user-selection of terms from pick-lists to enter a query. As the Office Action admits, Cochran does not teach or suggest a free-text search feature, as is presently claimed.

While the Examiner also contends that figures 11-12 of Cochran describe a system in which some attribute-value pairs refine other attribute-value pairs, the system described with respect to those figures (the Directory tree system) is not properly combined with the non-hierarchical system described with respect to figures 3-8. As explained above, Cochran treats these as separate systems that “have different advantages and disadvantages.” (Cochran ‘273, col. 8:1-3.) She never suggests combining these systems and never teaches how they could be combined.³

Cochran ‘581, which is described in the Background of Cochran ‘273 and specifically incorporated by reference into Cochran ‘273, teaches that in the non-hierarchical system, once a user selects a category, the term for that category **cannot** be refined. (See Cochran ‘581, col. 9:24-26; col. 12:40-49.) Likewise, Cochran ‘273 teaches that once a term for a category is selected, that category is no longer available – that is, the selected term cannot be refined. (Cochran ‘273, col. 6:66 – col. 7:5) Thus, these two types of systems are conceptually and functionally distinct.

The Examiner cites Yahoo! as supplying a free-text search box that, when combined with Cochran’s non-hierarchical system, reads on the present limitation. The motivation offered is “to allow a user to search/retrieve catalogued information elements quickly and eliminate retrieving irrelevant information and to display information to a user.” The technical validity of this combination is not explained.

³ Cochran ‘581, which is described in the Background of Cochran ‘273 and specifically incorporated by reference into Cochran ‘273, teaches that in the non-hierarchical system, once a user selects a category, the term for that category **cannot** be refined. (See Cochran ‘581, col. 9:24-26; col. 12:40-49.) Likewise, Cochran ‘273 teaches that once a term for a category is selected, that category is no longer available – that is, the selected term cannot be refined. (Cochran ‘273, col. 6:66 – col. 7:5)

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There is no motivation to combine the teaching of Yahoo!'s Directory system with Cochran's non-hierarchical system. Cochran explains that these two types of systems are distinct and treats them as distinct systems with distinct features, advantages, implementations, etc. Cochran therefore teaches away from using any teaching of Yahoo! in its non-hierarchical system. Moreover, the recited motivation is a generic motivation driving virtually any improvement in a database search system. The recited motivation does not provide a basis to drive one of skill in the art to select a particular feature of Yahoo! (the free-text search feature) to combine with Cochran's non-hierarchical system, nor does it overcome Cochran's explicit teaching away from such combination.

In fact, it is not clear what the technical result of this combination would be. Moreover, the Cochran and Yahoo! references considered in combination do not teach the presently claimed feature. Yahoo! is a directory-type system. Pre-defined categories and subcategories are arranged into a hierarchical tree-like structure. As discussed in a previous response, Yahoo! does not permit combining mutually incomparable attribute-value pairs into a single navigation state.⁴ The free-text search box permits searching of these pre-defined categories and subcategories (which may be deeply nested, but are not conjunctions of mutually incomparable categories) and individual materials in the database. For example, while the exact argument is unclear, as suggested by the Examiner, a search for "America" may yield a variety of results, including a site for "BBC News: America." "Society and Culture" is a subcategory of the "Directory" and can also be searched for subcategories. The results however do not comprise a conjunction of two mutually incomparable attribute-value pairs. The Yahoo! free-text search box enables only this type of search of pre-existing categories.

⁴ Although Yahoo! appears now to be cited only for its text-search box feature, the Office Action is unclear about the full scope of what Yahoo! is believed to teach relevant to the present claims. Claim 1 recites (a) each of the attribute-value pairs describes all of the materials in the navigation state in accordance with the particular expression; and (b) the navigation state includes an attribute-value pair (the "second attribute-value pair") that is mutually incomparable with the first attribute-value pair. Elements (a) and (b) distinguish directory systems described in the cited prior art, including the Yahoo-like directory system described in Cochran '273, which lack a navigation state that includes mutually incomparable attribute-value pairs and in which each of the attribute-value pairs for that navigation state describe all of the materials in the navigation state. Applicants understand this distinction to be previously established during previous prosecution with the Patent Office. The Examiner is further invited to review the prosecution history of parent application U.S. App. No. 09/573,305, where these points have also been addressed at length.

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Even if Cochran (or any other reference of record) provided some teaching or suggestion to combine a directory system with a non-hierarchical system (and it does not), the combination of those two systems still would not yield the claimed invention. Since Yahoo! and Cochran are distinct types of systems, and the Yahoo! reference in particular is merely an illustration of an interface, with no supplemental teaching, the direct outcome of combining them is not clear. Yahoo! depends on having a pre-defined list of terms to search. The only such list in Cochran is the collection of defined categories. At most, the application of Yahoo! to Cochran would lead to searching on the pre-defined categories in Cochran, i.e., the individual (non-hierarchical) categories shown in the pick-lists in Figs. 3-8 of Cochran. There is no teaching in either reference that would suggest or enable generating a multi-term interpretation mapping a free-text query to a navigation state that corresponds to a conjunction of mutually incomparable attribute-value pairs, as claimed here. Although Cochran allows user-selection of combinations of categories, this is an entirely different function from free-text searching on the space of such combinations of categories. Cochran does not teach any other method of computing conjunctions of categories, except by user selection. Thus, Yahoo!'s free-text search feature would be limited to searching the pre-defined single categories and could not be obviously adapted to Cochran's system in a way that would permit searching a space of navigation states corresponding to conjunctions of mutually incomparable attribute-value pairs. Neither Cochran nor Yahoo! supplies the missing feature, and the technical considerations are not addressed. Thus, the combination of Cochran and Yahoo! does not teach mapping a free-text query to a navigation state corresponding to a particular expression of attribute-value pairs that is a conjunction of mutually incomparable attribute-value pairs like {Year:1996 AND Wine Types: Sweet Wines AND Wineries:Red Birch} or {Year:1996 AND Flavors:Sweet AND Wine Types: Red Wines}, examples given in the present application, i.e., when the conjunctions are not single categories that are explicitly enumerated in the system.

It is at most through impermissible hindsight, starting with the solution that Applicants teach, that one could combine the systems of the prior art to obtain what is currently claimed.

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CONCLUSION

For the reasons stated above, Applicant respectfully submits that the rejections contained in the Final Office Action mailed on January 11, 2005 have been overcome and that the pending claims are in condition for allowance.

Please deduct the fee for the present RCE, set forth in § 1.17(e), from our Deposit Account No. 08-0219.

Please apply any charges not covered, or any credits, to Deposit Account No. 08-0219. The Examiner is encouraged to telephone the undersigned attorney for the Applicant to resolve any outstanding issues.

Respectfully Submitted,



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